

CLAIMS

1. A system comprising:
 - an interface;
 - a class, the class configured to implement the interface,
 - a function, the function a member of the class and a member of the interface;
 - an interface vtable, the interface vtable comprising a first pointer, the first pointer configured to point to the function; and
 - an object, the object an instance of the class, the object comprising a second pointer, the second pointer configured to point to the interface vtable.
2. The system according to claim 1, wherein
 - the object comprises a third pointer, the third pointer configured to point to a canonical base address for the object.
3. The system of claim 2, wherein
 - the third pointer is located at a predefined offset from the second pointer.
4. The system of claim 3, wherein
 - the third pointer is adjacent to the second pointer.
5. The system according to claim 1, further comprising:
 - a class vtable, the class vtable comprising a fourth pointer, the fourth pointer configured to point to the function.
6. The system of claim 5, wherein
 - the function has a name, and the class vtable is indexed by the name of the function.
7. The system of claim 1, wherein
 - the function has a name, and the interface vtable is indexed by the name of the function.

8. A method for function dispatch, comprising:
- receiving a request to invoke a function, the function being a member of an interface, the function being a member of a class that implements the interface;
 - receiving a first pointer, the first pointer configured to point to an interface vtable, the interface vtable associated with the interface, an object comprising the first pointer, the object being an instance of the class that implements the interface;
 - receiving a second pointer, the second pointer configured to point to the function, the interface vtable comprising the second pointer; and
 - invoking the function.
9. The method of claim 8, wherein
- the function is invoked with the canonical base address of the object as an argument.
10. An article of manufacture comprising a computer-readable medium having stored thereon instructions adapted to be executed by a processor, the instructions which, when executed, define a series of steps to be used to control a method for function dispatch, said steps comprising:
- receiving a request to invoke a function, the function being a member of an interface, the function being a member of a class that implements the interface;
 - receiving a first pointer, the first pointer configured to point to an interface vtable, the interface vtable associated with the interface, an object comprising the first pointer, the object being an instance of the class that implements the interface;
 - receiving a second pointer, the second pointer configured to point to the function, the interface vtable comprising the second pointer; and
 - invoking the function.
11. The article of manufacture of claim 10, wherein

the function is invoked with the canonical base address of the object as an argument.

12. A method for casting a reference to an object, comprising:
 - receiving a first reference, the first reference configured to refer to an object, the first reference having a type defined by an interface;
 - receiving a request to cast the first reference to a type defined by a class that implements the interface; and
 - receiving a pointer, the pointer contained in the object, the pointer configured to point to a canonical base address of the object.
13. The method according to claim 12, wherein
 - the pointer is located at a predetermined offset from a memory location referenced by the first reference.
14. The method according to claim 12, further comprising:
 - returning a second reference, the second reference having a type defined by the class that implements the interface.
15. An article of manufacture comprising a computer-readable medium having stored thereon instructions adapted to be executed by a processor, the instruction which, when executed, define a series of steps to be used to control a method for casting a reference, said steps comprising:
 - receiving a first reference, the first reference configured to point to an object, the first reference having a type defined by an interface;
 - receiving a request to cast the first reference to a type defined by a class that implements the interface; and
 - receiving a pointer, the pointer contained in the object, the pointer configured to point to a canonical base address of the object.
16. The article of manufacture of claim 15, wherein
 - the pointer is located at a predetermined offset from the location referenced to by the first reference.